

WHAT IS CLAIMED IS:

1. A developer supply cartridge detachably mountable to a main assembly of an image forming apparatus, comprising:

5           a developer accommodating portion of  
accommodating a developer;

          a discharging opening for discharging the  
developer accommodated in said developer accommodating  
portion to a developer receiving opening of a  
10   developer receiving cartridge provided with developing  
means for developing an electrostatic image formed on  
an image bearing member with the developer, the  
developer receiving cartridge being detachably  
mountable to the main assembly of the image forming  
15   apparatus;

          a shutter member movable between an opening  
position for opening said discharging opening and a  
closing position for closing said discharging opening;

          an engaging portion for engagement with the  
20   developer receiving cartridge so as to receive, from  
said developer receiving cartridge, a force for moving  
said shutter member from said closing position to said  
opening position, in interrelation with a relative  
movement between said developer supply cartridge and  
25   said developer receiving cartridge toward each other  
in a mounting-and-demounting direction of said  
developer supply cartridge relative to the main

assembly of the image forming apparatus.

2. A cartridge according to Claim 1, wherein the relative movement is provided by mounting action of  
5 said developer supply cartridge to the main assembly of the image forming apparatus with the developer receiving cartridge mounted to the main assembly of the image forming apparatus.

10 3. A cartridge according to Claim 1, wherein the relative movement is provided by mounting action of said developer receiving cartridge to the main assembly of the image forming apparatus with said developer supply cartridge mounted to the main  
15 assembly of the image forming apparatus.

4. A cartridge according to Claim 2, wherein the relative movement is provided by mounting action of  
said developer receiving cartridge to the main  
20 assembly of the image forming apparatus with said developer supply cartridge mounted to the main assembly of the image forming apparatus.

5. A cartridge according to Claim 1, wherein  
25 said engaging portion receives, from said developer receiving cartridge, a force for moving said shutter member from said opening position to said closing

position, in interrelation with a second relative movement between said developer supply cartridge and said developer receiving cartridge away from each other in a mounting-and-demounting direction of said developer supply cartridge relative to the main  
5 assembly of the image forming apparatus.

6. A cartridge according to Claim 5, wherein the second relative movement is provided by demounting  
10 action of said developer supply cartridge from the main assembly of the image forming apparatus with the developer receiving cartridge mounted to the main assembly of the image forming apparatus.

15 7. A cartridge according to Claim 5, wherein the second said relative movement is provided by demounting action of said developer receiving cartridge from the main assembly of the image forming apparatus with said developer supply cartridge and  
20 said developer supply cartridge mounted to the main assembly of the image forming apparatus.

8. A cartridge according to Claim 6, wherein the second said relative movement is provided by  
25 demounting action of said developer receiving cartridge from the main assembly of the image forming apparatus with said developer supply cartridge and

said developer supply cartridge mounted to the main assembly of the image forming apparatus.

9. A cartridge according to any one of Claims 1-  
5 8, wherein said engaging portion is provided in said shutter member.

10. A cartridge according to Claim 9, wherein said engaging portion is in the form of a groove  
10 portion formed in said shutter member, and the groove portion receives the force for moving said shutter member by engagement with a projection provided in said developer receiving cartridge.

15 11. A cartridge according to Claim 10, wherein said shutter member is rotatable, and said shutter member is provided with a plurality of communication ports for communication with said discharging opening, and there are provided a plurality of such grooves.

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12. A cartridge according to Claim 10, wherein said shutter member is rotatable and is provided with two communication ports communicatable with said discharging opening, and the two communication ports  
25 are disposed at substantially symmetrical positions relative to a center of rotation of said shutter member, and said groove portions are disposed at four

positions which are substantially symmetrical with respect to the center of rotation.

13. A cartridge according to Claim 1-8, wherein  
5 said developer supply cartridge is provided with a guided portion to be guided in a direction substantially the same as the mounting-and-demounting direction by said developer receiving cartridge.

10 14. A cartridge according to Claim 1, wherein said developer supply cartridge is provided with a portion for preventing simultaneous dismounting of said developer supply cartridge and said developer receiving cartridge from the main assembly of the  
15 image forming apparatus.

15. A cartridge according to Claim 1, wherein  
said developer receiving cartridge is provided with the image bearing member.

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16. A developer receiving cartridge detachably mountable to a main assembly of an image forming apparatus, said cartridge comprising:

developing means for developing an  
25 electrostatic image formed on the image bearing member with a developer;

a developer receiving opening for receiving

the developer from a developer discharging opening of  
a developer supply cartridge which is detachably  
mountable to a main assembly of the image forming  
apparatus; and

5           an engaging portion for engagement with said  
shutter member, provided in the developer supply  
cartridge, so as to apply a force to move said shutter  
member from a closing position for closing the  
discharging opening to an opening position for opening  
10 the discharging opening, in interrelation with a  
relative movement of said developer supply cartridge  
and said developer receiving cartridge toward each  
other.

15           17. A cartridge according to Claim 16, wherein  
the relative movement is provided by mounting action  
of said developer supply cartridge to the main  
assembly of the image forming apparatus with the  
developer receiving cartridge mounted to the main  
20 assembly of the image forming apparatus.

          18. A cartridge according to Claim 16, wherein  
the relative movement is provided by mounting action  
of said developer receiving cartridge to the main  
25 assembly of the image forming apparatus with said  
developer supply cartridge mounted to the main  
assembly of the image forming apparatus.

19. A cartridge according to Claim 17, wherein the relative movement is provided by mounting action of said developer receiving cartridge to the main assembly of the image forming apparatus with said  
5 developer supply cartridge mounted to the main assembly of the image forming apparatus.

20. A cartridge according to Claim 15, wherein said engaging portion applies the force for moving  
10 said shutter member from the closing position to the opening position in interrelation with a second relative movement of said developer supply cartridge and said developer receiving cartridge in a mounting-and-demounting direction of said developer supply  
15 cartridge relative to the main assembly of said image forming apparatus.

21. A cartridge according to Claim 20, wherein the second relative movement is provided by demounting  
20 action of said developer supply cartridge from the main assembly of the image forming apparatus with the developer receiving cartridge mounted to the main assembly of the image forming apparatus.

22. A cartridge according to Claim 20, wherein  
25 the second said relative movement is provided by demounting action of said developer receiving

cartridge from the main assembly of the image forming apparatus with said developer supply cartridge and said developer supply cartridge mounted to the main assembly of the image forming apparatus.

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23. A cartridge according to Claim 21, wherein the second said relative movement is provided by demounting action of said developer receiving cartridge from the main assembly of the image forming apparatus with said developer supply cartridge and  
10 said developer supply cartridge mounted to the main assembly of the image forming apparatus.

24. A cartridge according to Claim 19, wherein  
15 said engaging portion is provided with a first portion for applying the force to said shutter member in interrelation with a mounting action of said developer supply cartridge to the main assembly of the image forming apparatus when said developer receiving  
20 cartridge is mounted to the main assembly of said image forming apparatus, and with a second portion for applying the force to said shutter member in interrelation with a mounting action of said developer receiving cartridge to the main assembly of  
25 t said image forming apparatus when said developer supply cartridge is mounted to the main assembly of the image forming apparatus.



25. A cartridge according to any one of Claims 6-24, wherein said developer receiving cartridge is provided with a second shutter member for opening and closing said receiving opening.

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26. A cartridge according to Claim 25, wherein said developer receiving cartridge is provided with a cover portion for covering said second shutter member, and said engaging portion is provided in said cover portion.

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27. A cartridge according to Claim 16-24, wherein said engaging portion is in the form of a projection which is engageable with a groove portion provided in said shutter member to apply the force for moving said shutter member.

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28. A cartridge according to Claim 27, wherein said shutter member is rotatable, and said shutter member is provided with a plurality of communication ports for communication with said discharging opening, and there are provided a plurality of such grooves.

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29. A cartridge according to Claim 25, wherein said second shutter member is moved by the main assembly of the image forming apparatus so as to open and close said receiving opening in interrelation with

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a mounting or demounting action of said developer receiving cartridge relative to the main assembly of said image forming apparatus.

5        30. A cartridge according to Claim 29, wherein said second shutter member is provided with a groove portion which is engageable with a projection provided in the main assembly of the image forming apparatus to move said second shutter member to open and close  
10 said receiving opening.

31. A cartridge according to any of Claims 16-24, wherein said developer receiving cartridge is provided with a guiding portion for guiding said developer  
15 supply cartridge in a direction which is substantially the same direction as said mounting-and-demounting direction.

32. A cartridge according to Claim 16, wherein  
20 said developer receiving cartridge is provided with a portion for preventing simultaneous dismounting of said developer supply cartridge and said developer receiving cartridge from the main assembly of the image forming apparatus.

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33. A process cartridge detachably mountable to a main assembly of an image forming apparatus, said

process cartridge comprising:

an image bearing member;

developing means for developing an  
electrostatic image formed on said image bearing

5 member with a developer;

a developer receiving opening for receiving  
the developer from a developer discharging opening of  
a developer supply cartridge which is detachably  
mountable to a main assembly of the image forming

10 apparatus; and

an engaging portion for engagement with said  
shutter member, provided in the developer supply  
cartridge, so as to apply a force to move said shutter  
member from a closing position for closing the  
15 discharging opening to an opening position for opening  
the discharging opening, in interrelation with a  
relative movement of said developer supply cartridge  
and said process cartridge toward each other.

20 34. An image forming apparatus comprising:

a developer supply cartridge detachably  
mountable to a main assembly of said image forming  
apparatus, said developer supply cartridge including a  
developer accommodating portion for accommodating a  
25 developer, a developer discharging opening for  
discharging a developer accommodated in said developer  
accommodating portion and a first shutter member

movable between an opening position for opening said discharging opening and a closing position for closing said discharging opening;

a developer receiving cartridge detachably mountable to a main assembly of said image forming apparatus, said developer receiving cartridge including developing means for developing an electrostatic image formed on an image bearing member with a developer, a developer receiving opening for receiving the developer from said discharging opening, a second shutter member for opening and closing said receiving opening, and an engaging portion for engagement with said first shutter member so as to move said first shutter member from said closing position to said opening position in interrelation with a relative movement between said developer supply cartridge and said developer receiving cartridge toward each other;

an engaging portion for engagement with said second shutter member so as to cause said second shutter member to open and close said receiving opening in interrelation with mounting or demounting action of said developer receiving cartridge relative to the main assembly of said image forming apparatus.